Bladder Urothelial Carcinoma & Ductal Breast Carcinoma

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Inspected Genes

- Tumor suppression genes:
  - TP53 = p53 "the guardian of the genome”
  - CDKN2A: cyclin-dependent kinase inhibitor 2A

- Oncogenes:
  - ERBB2: EGF receptor family
  - MYC: codes for MYC proteins → controls other genes

Urothelial Carcinoma

- Urothelial carcinoma of the bladder (UCB) is the fifth most common cancer in the USA.
- The direct economic cost of bladder cancer was US$ 3.7 billion in 2001, making it the most expensive of all cancers in terms of cost per patient, and the fifth most expensive in terms of total health care expenditure.
- UCB has two main clinical manifestations that affect prognosis: noninvasive lesions that usually recur but rarely progress, and aggressive muscle-invasive lesions that progress and are associated with poor long-term survival.

Ductal Breast Carcinoma

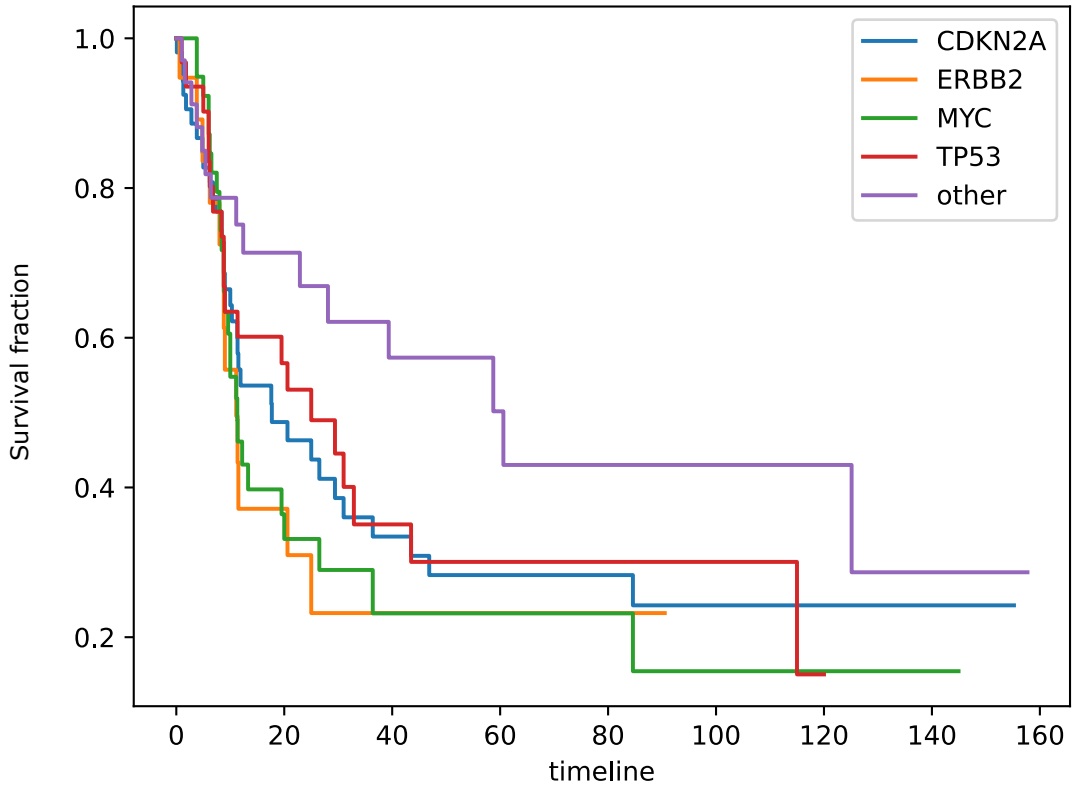
- a breast carcinoma arising from the ducts
- Ductal carcinomas account for about two thirds of all breast cancers
- Two types of ductal carcinomas have been described: ductal carcinoma in situ (DCIS) and invasive breast carcinoma

Genotype Comparison

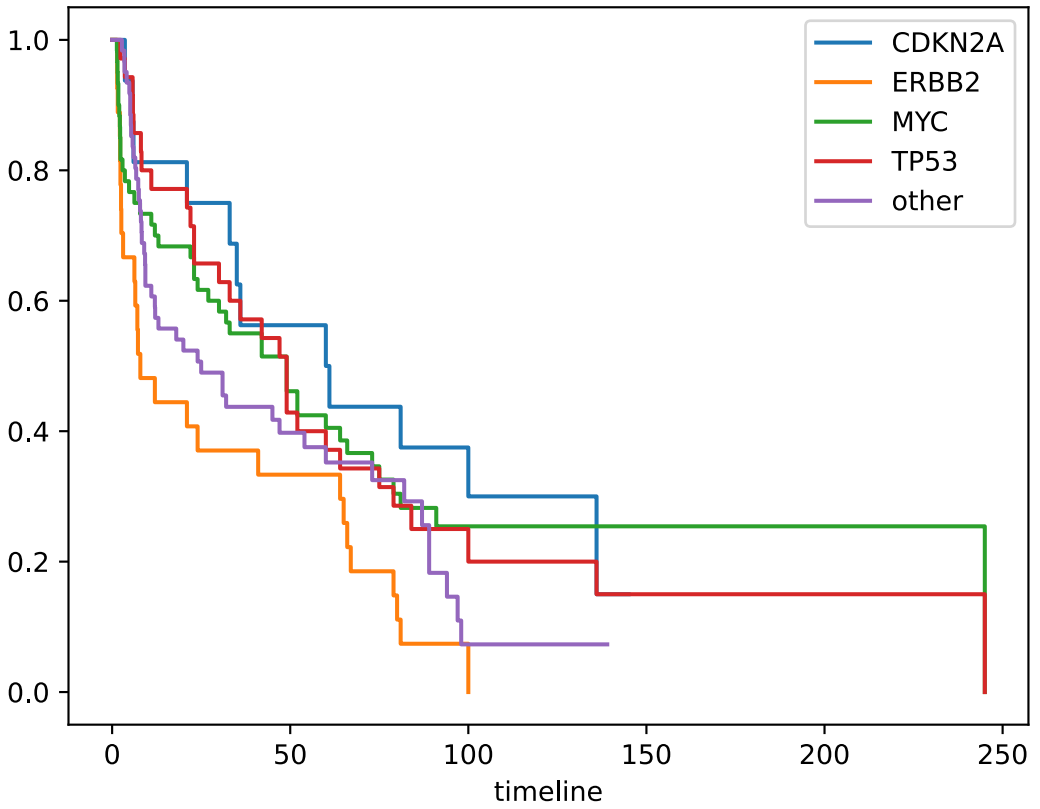
Associated prognosis	Bladder Urothelial Carcinoma	Ductal Breast Carcinoma
Poor prognosis	Overexpression TP53 (TSG)	Underexpression TP53 (TSG)
Good prognosis	Overexpression CDKN2A (TSG)	-
Poor prognosis	Overexpression ERBB2 (Oncogene)	Overexpression ERBB2 (Oncogene)
Good prognosis	-	-

Kaplan-Meier Plots

Bladder Urothelial Carcinoma

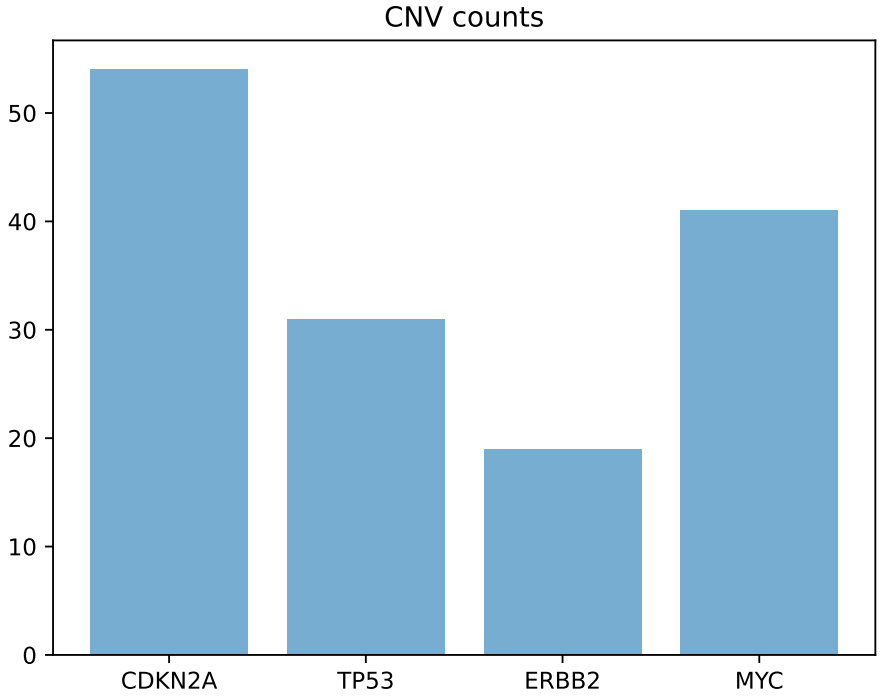


Ductal Breast Carcinoma

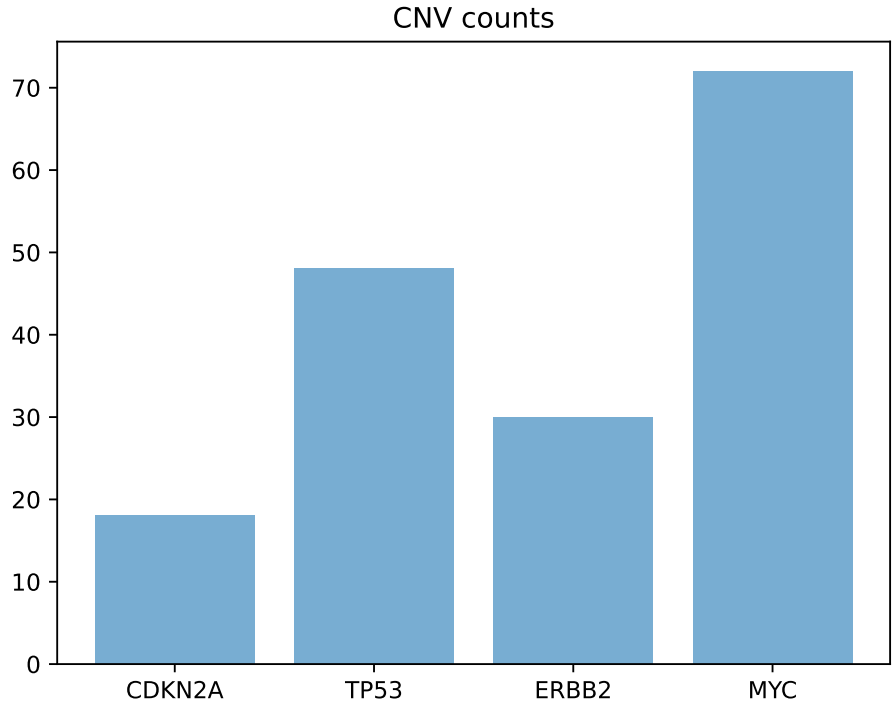


CNV counts across cancer types

Bladder Urothelial Carcinoma

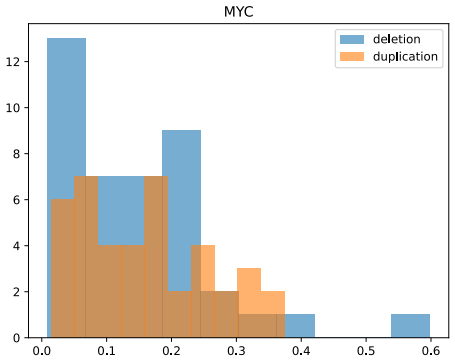


Ductal Breast Carcinoma

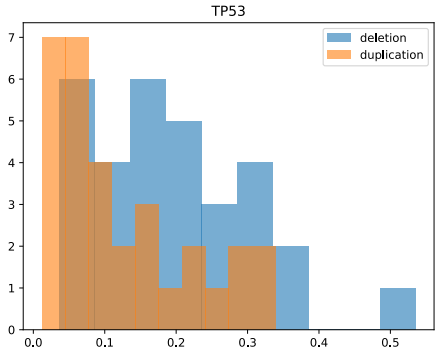


Duplication/deletion of gene per mutation type

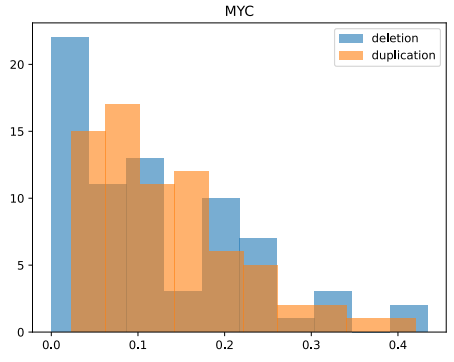
Oncogenes



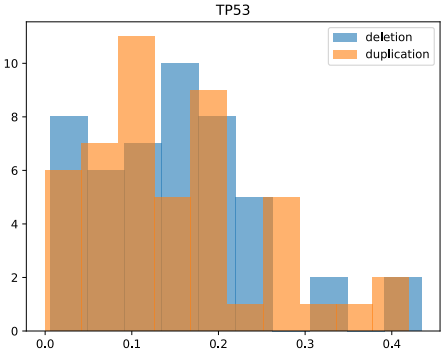
Tumor Surpressor Genes

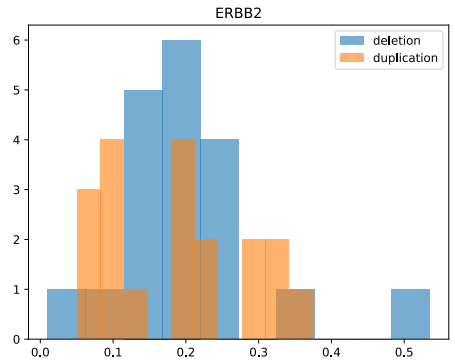


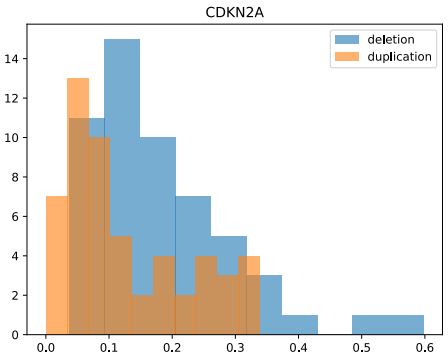
Oncogenes

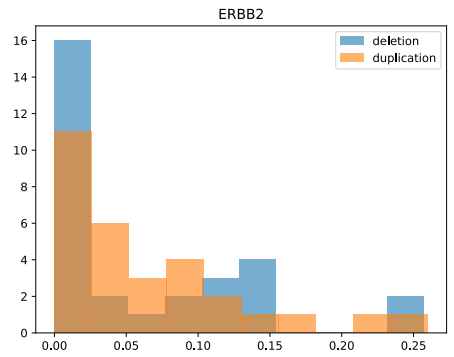


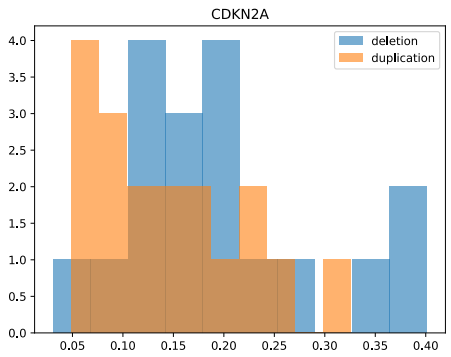
Tumor Surpressor Genes



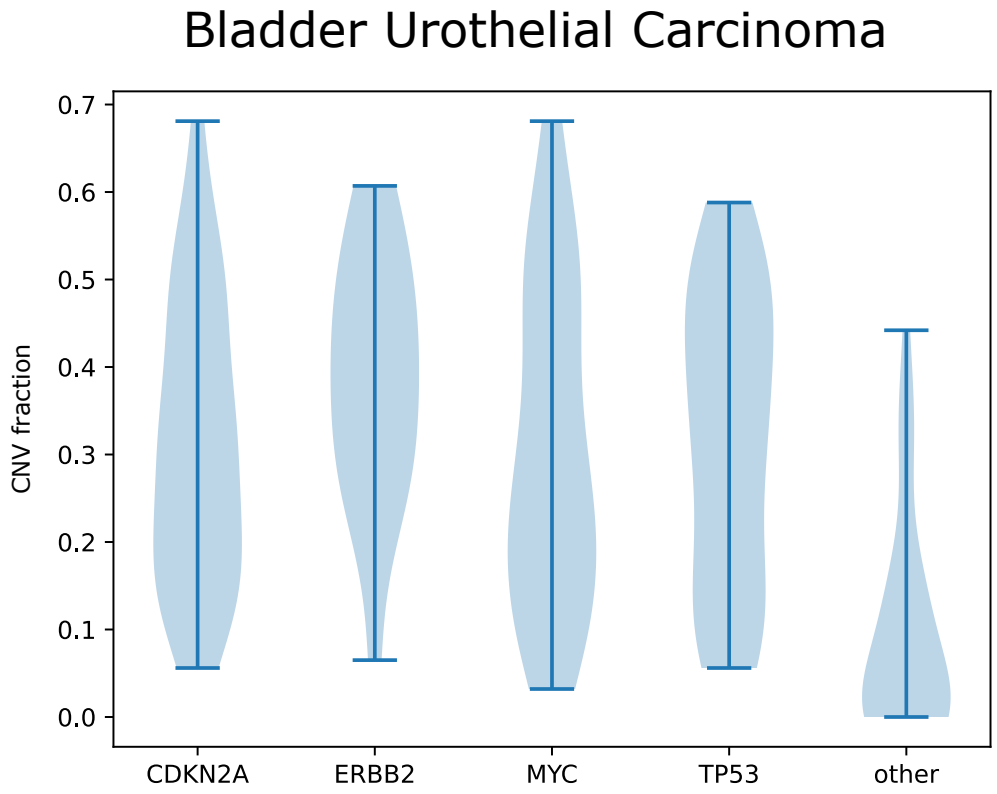


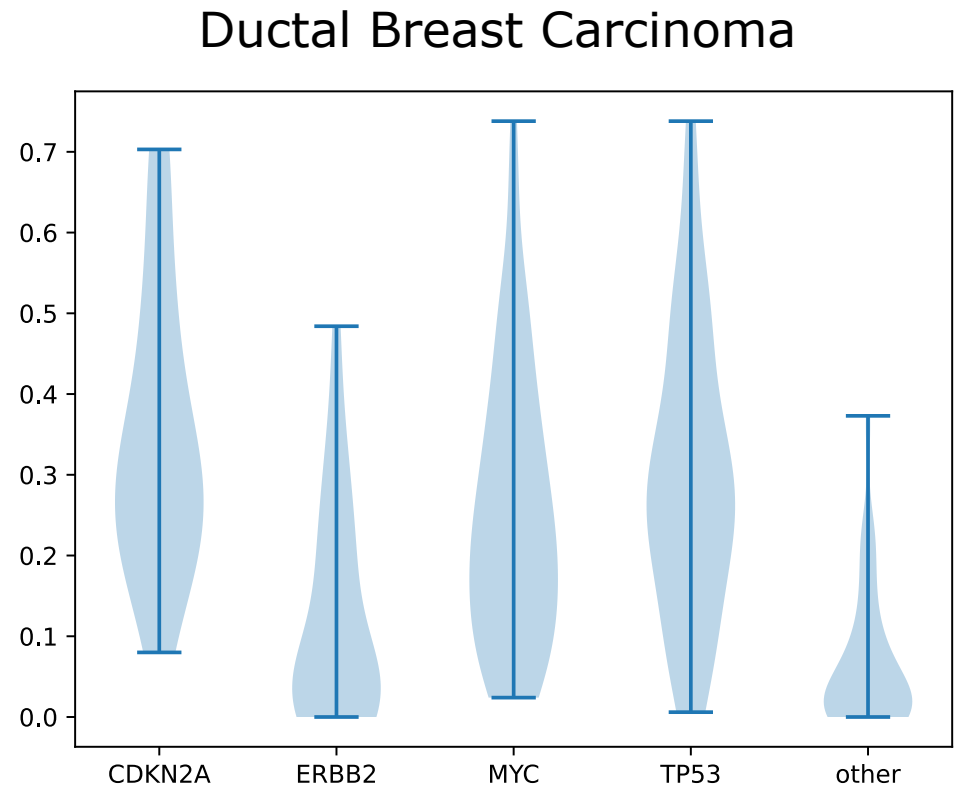






CNV frequencies across cancer types





Summary/Conclusions

- Duplication in ERBB2 leads to worse outcomes in both cancer types
- Deletions in CDKN2A play a more important role in Bladder Urothelial Carcinoma than in Ductal Breast Carcinoma
- TP53 Deletions seem to be associated with poor diagnosis in Bladder Urothelial Carcinoma, less strong association in Ductal Breast Carcinoma
- Duplications in MYC seem to be more detrimental in Bladder Urothelial Carcinoma than in Ductal Breast Carcinoma but no confirmation found

Literature

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